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THE long-continued use of opium or its salts (in any considerable quantity) engenders a disorder of the nervous system which is entitled to distinctive recognition. Its sequence is as much a pathological entity as alcoholism, saturnism, hysteria or chorea.

Meconeuropathia is as much entitled to recognition as that well-known disease, epilepsy, whose clinical features medical science has so much better portrayed than its distinctive pathology.

The reputed pathology of disease is subject to change, dependent upon the modification and improvement in method of study, and the manner in which, from time to time, the profession views the revelations of science as to morbid products and necroscopic appearances, and their relation to the pathological processes which may have preceded or followed them. Witness, in illustration, the changing and changed views of the pathology of phthisis and cholera, which just now are generally supposed to have but little to do with the nervous system, though the state of the nervous system has, in my opinion, very much to do with them, notwithstanding their bacillian relations, which, though generally recognized, are yet not definitely settled.

Whether bacilli make these diseases or these diseases furnish the congenial soil for the bacilli, is sufficiently contested, in certain quarters, to warrant the assertion, whatever may be our individual opinion, that the final pathological relations of bacilli to phthisis and cholera, are not incontestibly determined and universally settled in the professional mind. Yet we accept phthisis pulmonalis and cholera Asiatica as facts, notwithstanding we may still discuss their respective pathology.

The writer has long been familiar with the distinctive symptomatological sequences of chronic opium poisoning of the nerve centers, having had abundant opportunity to see the neuro-psychic phase of the malady during his connection with the asylum for the insane, at Fulton, Mo., as superintendent and physician, from 1866 to 1872, and of observing them since the latter date in a practice which has grown sufficiently neurological to occupy the writer's whole time, to the exclusion of other diseases. He has deferred the present communication in the hope that he might reach a more satisfactory conclusion than that which he now holds, respecting a definite pathology for meconeuropathia.

Under the title of chronic meconism he has discussed this disease heretofore in its symptomatological grouping, in considering its treatment, but has never emphasized, as he does now, in this communication, nor has anyone else so emphasized the fact, that the long-continued and uninterrupted impressions of opium upon the cerebro-spinal and allied ganglionic system engenders a state of undoubted neuratrophic and combined specific poison-impairment, which persists a long time after the abstraction of the drug, and which is immediately apparent in its intensest form upon its abrupt withdrawal.

This condition and its symptoms are to be differentiated from the symptomatology of the direct and daily renewed opium stimulation, which marks the graver condition and its symptoms, while the patient's blood holds the abnormal excitant in solution in the circulation.

The opium habituate maintains a semi-physiological condition while under opium influence. It is only when it is taken away from him that the true and pathological condition of his psychical, sensory and ganglionic nervous systems, especially, become apparent. Remotely, it is the poison that has made the trouble. Immediately, it is the repetition of it in quantities and at intervals to which the abnormal nerve centers have become accustomed, that masks the real malady and give the patients relief.

It is of the utmost importance, in practice, that we should recognize the undoubted fact that opium habitually taken into the system engenders a neurosis, a psycho-neurosis, at the same time that its administration palliates and subdues this psycho-neurosis for a very long time, if given in gradually augmented doses.

It is not to recent poisoning that the opium neurosis is due, but to a slowly brought about change, which persists long after the opium is withdrawn, if the patient do not perish from too sudden abstraction of the drug, and blind and unwarranted reliance in a *vis medicatrix nature* (which is not present in these cases) for self-rectification, as I have known to occur in some cases, and as I believe occurs in many more cases than are recorded, the death of the patient being attributed to causes which are supposed to be disconnected from the meconophagism, but which are really the result of it, such as cardiac paralysis, neuralgia of the heart, and angina pectoris, so called.

Obersteiner, a German physician, advocates abrupt withdrawal—a practice, which, from extensive observation of attempts made by other physicians with cases, which have come into my hands, and from desperate self-attempts of my patients to quit the habit of opium suddenly and from a knowledge of fatal results from this practice—I most unqualifiedly and emphatically condemn as unscientific and cruel, in view of the persisting morbid sequelæ of opium addiction. It is an inhuman and barbarous practice. When the habit is of recent standing, the quantity taken is small and the consequent central nerve-impairment so slight as to leave the nervous system in a state of almost physiological recuperability, of course the abrupt weaning process may then be considered, and if the results of a greatly shattered nervous system do not appear within thirty-six or forty-eight hours (for some patients take but one large dose of ten or twenty grains of morphine a day whose impression lasts for twenty-four hours), it may be tried and maintained.

The opium neurosis we are considering is not an

intoxication from the drug, but a central neurotic change, brought about by the long persisting perversion of function and impairment of central nervous nutrition, from its persisting presence in the nutrient pabulum of the circulation.

The psychosis of opium is a blended intoxication and chronic poisoning of the psychical centers of the brain; other symptoms of acute opium poisoning are essentially different, being mainly a profound paralysis of sensation and of the centers of involuntary motion especially having their origin in the medulla and upper part of the spinal cord—profound narcosis, lowered respiratory movements, etc., while chronic opium poisoning, or meconeuropathia, is characterized by repeated nerve excitations, in which the nerve centers, not being completely overcome, a kind of tolerance is established, with progressively developing abnormal molecular neural changes, which are as repeatedly covered up and masked by the renewed doses, till some sudden deprivation of the drug or failure to appropriate it, reveals, in full force, the neural mischief which has been gradually done. Opium, like a bank defaulter, both makes and masks the mischief done, which may be kept concealed so long as he stays in the institution.

In former communications the writer has discussed the effects of opium as a toxic psychosis (*vide* "The Opium Psycho-Neurosis," ALIENIST AND NEUROLOGIST, Jan. 1884, and paper before the St. Louis Medical Society).

The purpose of this paper is to give emphasis to those neuropathic features which entitle it to distinctive prominence in the nomenclature of disease.

Within a period of from ten to twenty-four hours, after twenty-four or thirty-six hours in rare cases, after the last dose of the accustomed stimulus has been taken, a singular psychical and physical restlessness becomes manifest. The patient becomes ill at ease, cannot sit or stand or lie still, moves or tosses about, and his or her attention cannot be steadily engaged by ordinary conversation.

Later, the restlessness intensifies. At this stage the patient will evade you, or seek some excuse to get where the missing morphine or opium prop can be found. He will, at this juncture, go clandestinely to the place where the vial, or powder or pill or deadly hypodermic syringe, is secreted, or make a pretext for visiting the nearest drug store or doctor. If to the latter, the victim has a ready-made story of a painful, fictitious malady, for which opium or some of its preparations, are prescribed. A convenient diarrhea, a sudden painful cough, a toothache or neuralgia attacks him. When the opium is out of him, he suffers real pain, but it is only *meconalgia*—the pain of opium withdrawn—the pangs which follow in the trail, and not from the fangs of the opium serpent.

If the patient is not suspected and under restraint, a ruse of this kind is successful, and the further progress of the symptoms is arrested by opium suppression.

But if the symptoms are not thus subdued, the mental restlessness passes in furtive glances of transient morbid suspicion, which soon pass into spectral illusions, hallucinations and delusions, and later into delirium, with marked agitation and sometimes slight tremors. The character and fright are not extreme, like those of alcoholic delirium, and the delirium is less easily broken than that from alcohol. The character of the transitory insanity following sudden opium withdrawal will be modified, like insanity in general, by the constitutional susceptibility and tendencies to insanity in the person. The hysterical diathesis will be unmasked in some cases, conditions bordering on true mania and despairing melancholia and suicidal tendencies will appear in others, while in others only wretchedness, mental confusion and fleeting illusions will appear, but in all there is head disturbance, approximating delirium and threatening insanity. This is the psychical picture, which in a not very limited experience, morbid nature, deranged by chronic opium poisoning of the brain, has always painted for me.

The lower neuropathic features are the following, with but little variation in all the cases which have come under my observation:

The general nervous agitation increases as the patient gets further away from the last remnant of narcotic support, when the opium has passed out of the system and finished its morbid mission within it. The limbs, especially the forearms, ache and pain, somewhat as if the patient were attacked all over with a severe muscular and arthritic rheumatism combined, and darting, lightning-like pains traverse the peripheral sensory nerves. This is only an approximative description of the pains, for the pains of the opium neurosis are as peculiar as those of locomotor ataxia, and preferably occupy the upper extremities, as those of posterior spinal sclerosis, are found chiefly in the lower limbs. Cold sweat and profuse, appears over the body, the enteric vaso-motor system seems paralyzed, and an exhausting diarrhea, at first loose and fecal, and finally watery, sets in. The patient feels as if dissolution were imminent. His tongue is furred and mouth clammy, the preternatural brilliancy which the eyes may but the day before have shown, is changed into a muddy, leaden appearance, with a look in them of hopeless despair. The tense facial lines of the patient under opium are markedly relaxed when its influence is gone.

The heart beats fast and feeble, but the temperature frequently falls a degree or two below normal, but I have never seen it mount rapidly above 98.30°

The respiration falls in frequency and becomes gaping, but it rarely becomes extremely slow and deliberate as in acute opium poisoning. The sclerotics in most cases, when the opium habit has not extended over many years, have a fairly liquid transparent look. The reflexes are exaggerated, and the patient has insomnia; or if there is drowsiness, it is an abnormal sort of somnolency of a delirious character, from which the patient starts at the slightest touch or without any excitation, in a fright.

Nausea and vomiting set in simultaneously with the

diarrhea; the bladder empties itself often; and every function under the control of the solar plexus seems to have lost its normal restraining influence.

The neural phenomena of the meconic neurosis below the head, in its crisis stage, resemble those of cholera nostras, excepting the pains in lieu of cramps being more diffused or confined more especially to the arms, while those of cholera are more frequent in the lower limbs, and I have no doubt that the cause of the symptom is in the exhaustion of Auerback's and Meissner's plexus, especially, in both diseases and in the semi-lunar ganglion of the sympathetic. The thoracic ganglia do not escape in either disease.

The head symptoms of the opium neurosis are essentially different from those of cholera morbus, and the enteric attack in the latter disease is far more violent and acutely destructive than in the former. The diarrhea and vomiting of the opium neurosis are more deliberate in character and are tolerated for several days, if unaverted by judicious medication, without fatal results, and are more promptly averted by opium given internally than cholera morbus, though it is surprising how effectually we may control cholera morbus by hypodermic morphia, though not so speedily as the diarrhea and vomiting of the opium neurosis. Opium is a congenial drug, in the diarrhea and vomiting following its withdrawal, and the certainty and promptitude with which it arrests the most alarming symptoms, even when given into a stomach that rejects everything else, is a diagnostic sign of the opium neurosis.

In the neurosis the nose does not become speedily pinched in appearance or the features so death-like and pale as they appear after a few hours of cholera morbus, and the voice does not get so husky or feeble.

I have seen a patient die of abdominal and cardiac dropsy following repeated self-attempts (always abandoned) to give up taking ten grains hypodermically a day; and I have known patients to die of heart paralysis after

sudden deprivation. I have never allowed these alarming symptoms to go on, in my own cases, but have begun at once to restore the opium to the normal quantity habitually used, till all symptoms of nerve failure have subsided, and then begun a rational system of gradual reduction, therapeutic substitution and reconstruction of the patient. The opium neurosis is not cured, even when the patient has been weaned from his accustomed drug, but he is often subject to neuropathical symptoms, and a proper subject for continued neurological treatment, requiring treatment for many months after cessation, to prevent a return to the use of the drug that damaged and enslaved. The patient is not safe from neural damage, even though he may never return to the drug, until he fattens some, feeds well habitually and sleeps much, and can resume his ordinary occupation without nervous fatigue and an inclination to take to opium or other form of stimulation. With this view of this disease it would be fitting here to protest against the substitution of some other form of stimulation for opium, abandoned or withdrawn, and when the disease-weakened nervous system has been enslaved by another stimulant narcotic, call that a cure.

There is a periodic form of morphia-craving, so much like periodical dipsomania as to entitle it to the term opiomania, which develops in patients of neurotic temperament who have been given morphia or opium to any considerable extent. This shows itself sometimes in persons who have been broken of the opium habit, and these are the most hopeless cases to treat.

This periodic opiomania is characterized by an overwhelming morbid craving for the drug, which comes on like the craving for drink to the periodic drinker, without warning, except a morbid restlessness and sometimes an irritable stomach, which a full dose of morphine—a third to half a grain—will appease, and if followed by a night of sleep, the craving will be allayed sometimes for a week, sometimes for a month. These cases should be studied

more than they are in the light of what we know of the periodic drink craving. They are easily developed by the administration of morphine or opium to neuropaths, in whose ancestry insanity and allied nervous diseases have been numerous.

But this is not the acute neurosis *sui generis* developed by repeated excesses in opium-taking, in the non-hereditarily neuropathic, but rather a less painful and less violent and more chronic and enduring form. From three to six weeks of abstinence, or abstinence and substitution combined, ordinarily suffices to cure the acute opium neurosis. The chronic form of the trouble is much more persistent, persisting oftentimes for a lifetime, because a dormant morbid heredity has been awakened into active life not to slumber again till the last sleep of life overtakes the unfortunate sufferer. The true opium neurosis sustains about the same relation to the chronic periodic form of opium neuropathy that alcoholism sustains to dipsomania.

Alcoholism is a morbid condition of the nervous system, developed by repeated alcoholic libations, dipsomania, a latent neuropathic condition, readily excited into activity by the poison. And the poison often develops this disease with surprising rapidity. These are the persons to whom a single drink is often dangerous and astonishes us with its consequences, because the latter are so extraordinarily disproportionate to the time the victim has been given to drink. Such persons become drunkards in a day, as it were; and persons like them become opiomaniacs or periodic opium-takers, or have for the intoxication insatiable desire after a few doses of morphia or opium.

The opium maniac, like the dipsomaniac, is prepared by inherent organic instability to be made so after one or a limited number of toxic impressions. In some instances he is as susceptible, by hereditary instability of psychical nerve elements, as powder or dynamite are to explode, needing only the exciting spark or concussion of a marked opium impression. But true meconeuropathia, or the consequences of prolonged and continuous meconism in

non-narcotic doses, so gradually induced that a kind of tolerance to the graver direct toxic effects is established, and the ordinary prompt narcotic effects are resisted by the organism, is, like chronic alcoholism, as contradistinguished from dipsomania, more gradually effected and developed by changes induced in the cerebro-spinal centers, through slow poisoning and nutritional perversion of neural tissue.

An acute psychosis resulting from opium in the blood in moderate quantities is, I am convinced from long observation and diligent inquiry, associated with inherent central nerve instability, often and most usually associated with the insane temperament, already actively displayed in some member of the family, and only dormant in the individual till aroused by the disturbing influence of the drug, and, like acute insanity, developed by alcoholic intoxication. Here both opium and alcohol become valuable diagnostic signs in our search for a dormant hereditary psychopathic tendency.

The sum of this subject, as thus only preliminarily and too cursorily presented, is this:

1. Single or a few large doses of opium cause an acute narcosis and well-known forms of physiological depression, which we are not here considering.

2. Under gradual habituation to increasing doses, acute, narcotic, ordinary toxic effects are, in great measure, resisted by the organism, and sensory analgesia, and psychical exaltation, followed by brain-weariness, somnolentia and sleep after each repetition of the dose, are the chief ordinary manifestations, with a final more or less impaired function of bowels, liver and skin, and with certain psychical features.

This is not the subject now claiming our attention. This true chronic meconism or papaverism and its characteristic symptomatology is due to the combined influence of a damaged and a poisoned nervous system.

3. A true acute psychosis is developed in the neuropathically inclined, as insanity is developed by a large

drink or two of some strong alcoholic beverage. This is the acute insanity of opium requiring two factors, hereditary predisposition and a central toxic influence to induce it. This we are not considering now.

4. A hereditary instability of nerve elements, lead some organisms to irresistibly crave stimulants at certain times, generally after ordinary nervous and physical exhaustion, and these are satisfied with alcohol or opium. If they happen to find solace in opium readily, they become meconophagists, or if alcohol first falls in their way, and the insatiate longings of their unstable nervous organisms find in some beverage containing it, the agreeable and temporarily satisfying impression their neuro-pathic organisms crave, their will (mastered by the lower dominant organic feeling) becomes a slave to the tyranny of a bad organism, regardless of consequences, and they enter, like the luckless DeQuincy, into an Iliad of woes.

But it is not this feature of the opium habit we are now considering, but rather the mark and impress it makes upon the central neural mechanism after the poison is no longer present in the blood, to mask or modify the symptomatic expression of the damaged neural mechanism.

This is the true meconeuropathia or morbid condition of nervous system engendered by the repeated and long-continued assaults of the toxic enemy on the cerebro-spinal and ganglionic centers, and which comes on shortly after the withdrawal of the drug, and abides with the system long after the drug is taken away, especially in permanent psychical aberration and final dementia.

If we contrast the prominent symptoms of opium present and opium absent in meconophagism and meconeuropathia or meconeuropathia, we find in all cases, in the former, constipation, psychical satisfaction or exaltation, followed by drowsiness and sleep, analgesia, fair tonicity of stomach and skin. In the latter, we find always very loose bowels, requiring medical restraint after the first day. Relaxed and perspiring skin, nausea and vomiting,

sensory hyperesthesia of special senses, hyperalgesia, especially about flexor regions of forearm and about joints of lower extremities (true meconalgias) psychical depression and insomnia, psychical delusions of dread and of approaching calamities.

These symptoms may be modified by treatment so as to end in convalescence in the course of six weeks, and to disappear entirely in the course of eight to ten, according to the degree of damage done, or, if ignored, they may end in irreparable mental alienation or death.

The therapeutic deductions are to restore the too suddenly abandoned drug, and then withdraw it gradually, supplanting it by the most sustaining nutrition, medicinal substitutes and sleep.

The chief practical point from this view is that it is not the presence of the poison that makes the mischief, though the poison has made it, but its absence, which reveals the damage. The poison is, in fact, in a measure, like the hair of the dog that heals the bite. Like relenting violence, if allowed to moderately handle its victims, it helps to lift up and heal the wound it has made, and soothe away the pain it has caused.

We have a damaged nervous system to repair, and we should only withdraw the opium as we reconstruct the damage it has made, because while it wounds, it also sustains. It is not enough to remove the foe, but we should repair the effects of his invasion as well; and while we should place the enemy in retreat, and drive him out, we should sustain the friend we fight for at the same time, and strengthen his powers of resistance.

I know, from ample observation in cases where it has been tried by others, and the patients, with minds deranged in consequence, have fallen into my hands, that Obersteiner's method of sudden weaning is cruel, dangerous and unscientific; for in the sequences of chronic opium poisoning, we have diseased conditions in which the central nervous system has been so crippled that it needs the sustaining crutch of opium; and opium is not

the only article of the *materia medica* that has the power to both pull down and prop up the system.

Such reasoning, as says the cause must be taken absolutely and at once away, is sophistical and fallacious, because of the fact here maintained, that a pathological condition abides after the agent that caused it has left the system, and the agent that made the mischief has, in lessened doses, most benignant compensatory and sustaining powers.
